

- ☒ fossil energy
- ☐ environmental
- ☐ energy efficiency
- ☐ other

Low-NO_x EMISSIONS APPLICATIONS

States Impacted:

All states, except Hawaii; states east of the Mississippi River have the highest concentration of coal-fired power plants

Benefit Areas:

Environment, Clean Coal Power Generation, Air Quality

Participants:

Foster Wheeler Corporation, Babcock & Wilcox, ABB Combustion Engineering, numerous electric utilities

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Description

Nitrogen oxides (NO_x) are one of the chief pollutants responsible for smog and ozone buildup, particularly in urban areas. These pollutants are released from most combustion sources (automobile engines and factories), and coal-fired electric utility plants. Relatively inexpensive, commercial processes for reducing these emissions are now being installed on many plants.

Three types of low NO_x burner technologies are available: (1) cell burners, (2) wall-fired low NO_x burners, and (3) tangentially fired low NO_x concentric firing systems (LNCFS) and T-2000 low NO_x burners. About 150 gigawatts (GW) of the coal-fired capacity in the U.S. has installed at least one of these burner types. Sales to date, including both the burner and associated installation fees, are approximately \$2 billion. The potential market could reach 270 GW with associated sales climbing to \$4.5 billion. NO_x emissions can also be lowered using the commercial gas reburning process. Natural gas is burned above the main coal-burning zone under conditions that break down NO_x pollutants into environmentally benign gases. Using finely ground micronized coal as the reburn fuel has also been demonstrated.

Goals

The goal of this technology is to provide cost-effective NO_x emission reductions for coal-fired power plants and to expand the promise of this technology to as large a population of power plants as technically and economically feasible.

Tangible Benefits

National: Low NO_x burners achieve NO_x reductions of 65 percent or better, and will help localities meet more stringent National Ambient Air Quality Standards (NAAQS) for ozone. In 1997, utilities using low NO_x boilers achieved emission rates that were approximately 16 percent below the allowable rate.

Regional: Nearly 200 GW of coal-fired power plants are concentrated in the 22 states and jurisdictions that comprise the Ozone Transport Rulemaking region. Low NO_x burner technology is a cost-effective method for reducing NO_x levels emitted into the atmosphere, and thus reduces smog (ozone) formation. Lower NO_x emissions also reduce the acidification of soils and lakes in the Eastern U.S.

Local: Low NO_x burners are the first line of defense in mitigating NO_x emission levels from coal-fired power plants in the member states of the Ozone Transport Commission.